



U.S. Department of the Interior
Bureau of Land Management

Module 1 – Lesson 3

Gathering Proper Equipment & Supplies for a Compliance Inspection





Lesson Objective:

By the end of this lesson each student should be able to...

Given a scenario involving a compliance inspection, identify all necessary equipment and supplies needed to effectively conduct specific compliance inspections and provide supporting rationale for why those items are needed.



Lesson Route

- Personal Protective Equipment (PPE)
- PPE and Compliance Inspections
- Other Equipment and Supplies for Compliance Inspections



Topic 1: Personal Protective Equipment (PPE)





Topic 1: PPE

What is the Definition of PPE?

- Personal protective equipment (PPE) is equipment worn to minimize exposure to hazards that may cause serious workplace injuries and illnesses.

What is the purpose and importance of PPE?

- To keep you safe!
 - PPE can make the difference between being safely covered or dangerously exposed.
 - PPE can help protect against harmful exposure, injury, or death.



Topic 1: PPE

What are examples of PPE specific for oil and gas surface inspectors?

- Hardhat
- Safety Glasses
- Hearing Protection
 - *Ear plugs, earmuffs, etc.*
- Safety-toe Boots
- Flame Resistant Clothing (FRC)
 - *Long-sleeve Shirt*
 - *Pants*
- Gas Monitor
 - *H₂S monitor, multi-gas monitor, etc.*

Topic 1: PPE

What should an inspector know about hardhats?

- Hardhat must meet ANSI Z89.1-2009
- Replace your hardhat 5 years after manufacture date
- Replace your hardhat if there are visible damages

How does an inspector determine when a hardhat was manufactured?

- Manufacture date is stamped or molded onto hardhat
 - The number in the middle of the stamp or mold is the year of manufacture, and the arrow points to the month of manufacture



Manufacture Date: May 2013

Topic 1: PPE

Why should inspectors wear hardhats?

- Protection from heavy equipment operation
 - (e.g., excavators, backhoes, etc.)
- Protection from moving equipment
 - (e.g., pumping unit, etc.)
- Protection from unexpected falling or flying objects



Topic 1: PPE

What should an inspector know about safety glasses?

- Wear American National Standards Institute (ANSI) Z87.1-rated safety glasses
 - Z87+ should be marked on the glasses



What other aspects of safety glasses should the inspector consider?

- UV protection to be more versatile
- Prescription safety glasses (if necessary)



Topic 1: PPE

Why should an inspector wear safety glasses?

- Protection from projectiles impacting eyes
 - (e.g., soil particles/chips of material flying in the air during construction)
 - (e.g., small pieces of equipment flying in the air after an accidental failure)



Topic 1: PPE

What should an inspector know about hearing protection?

- Ensure ear plugs are inserted correctly.
- Re-usable insert type hearing protection devices should be disposed of or cleaned after each use and stored in a sanitary location.

Why should inspectors wear ear protection?

- Protection from loud noises*
 - Construction/Reclamation/Remediation Activities
 - (e.g., excavators, backhoes, etc.)
 - Drilling Activities
 - (e.g., drill rig, engines, large vehicles, etc.)
 - Production Operations
 - (e.g., engines, compressors, equipment noises, large vehicles, etc.)



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**see Chapter 27 of H-1112-1 for more details*



Topic 1: PPE

What should an inspector know about safety-toe boots?

- Choose comfortable boots
- Boot must be steel-toed or composite-toed

Why should an inspector wear safety-toe boots?

- Protection from unexpected falling objects
- Protection from lacerations/punctures



Topic 1: PPE

What should an inspector know about flame resistant (FR) clothing?

- IB-OC-2020-014
 - FR shirts must have BLM logo
 - FR outerwear (*overalls, jackets, etc.*) must have BLM logo
- FR Clothing has specific washing procedures
- Outermost layer must be FR

What other aspects of FR clothing should the inspector consider?

- Environmental conditions
 - FR outwear for cold weather, rain, etc.
 - (e.g., gloves, parka, headwear, etc.)





Topic 1: PPE

Why should an inspector wear flame resistant (FR) clothing?

- Protection against potential flames or fire hazards

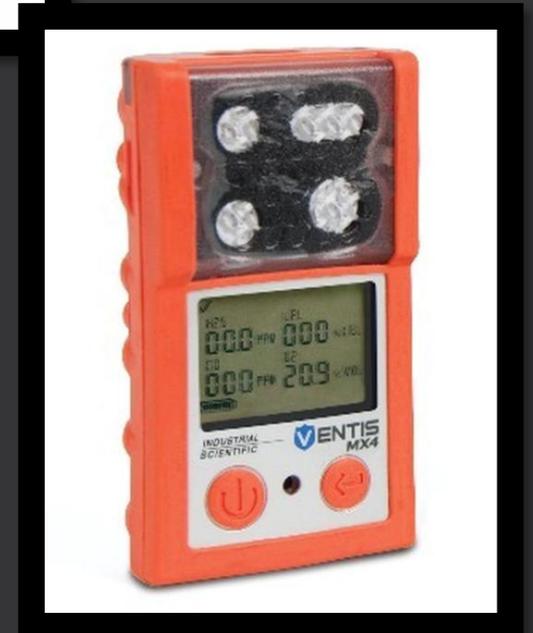
Does BLM have policy on when to wear FR clothing?

- Washington Office IM-2012-029
 - The situations where all employees must wear FR clothing include, but is not limited to the following:
 - Immediately upon arrival on all active drilling locations;
 - Immediately upon arrival on any location where venting or flaring operation are occurring;
 - Immediately upon arrival of all active locations where well servicing/workover, completion or plugging operations are occurring;
 - Immediately upon arrival any location to inspect, witness, or investigate any oil spill;
 - During any other hazardous operations identified as requiring its use and noted on a Risk Assessment;
 - Etc.

Topic 1: PPE

What should an inspector know about gas monitors?

- Several types of gas monitors
 - H₂S-only monitors
 - Multi-gas monitors measure:
 - Hydrogen Sulfide (H₂S)
 - Oxygen (O₂)
 - Carbon Monoxide (CO)
 - Lower Explosive Level (LEL)
- Gas monitors can either be charged regularly for extended use or have a certain lifespan (*i.e., 24 months, 36 months, etc.*)
- Gas monitors must have periodic bump tests and calibrations





Topic 1: PPE

Why should an inspector wear a gas monitor?

- Protection from exposure to harmful gas inhalation or explosive gases
 - H₂S
 - Hydrogen sulfide is deadly if exposed at high concentrations or for long periods (*e.g., toxic H₂S gas is present in sour natural gas, etc.*)
 - CO
 - Carbon monoxide is deadly if exposed at high concentrations or for long periods (*e.g., this asphyxiating gas may be generated from incomplete combustion*)
 - O₂
 - Lack of adequate oxygen concentration in confined spaces can be deadly
 - Atmosphere enriched with oxygen increases risk of fire
 - (*e.g., gas leak could displace oxygen*)
 - LEL
 - Measures the percent of flammable/explosive gas concentration in the atmosphere
 - (*e.g., natural gas leak can pose an explosion risk*)

**see Chapter 20 of H-1112-1*

Topic 1: PPE

What is BLM's permissible exposure limit for H₂S?

- 10 parts per million (ppm)

What should the inspector do if a monitor alerts them of 10 ppm of H₂S?

- Leave the area upwind and uphill

What other equipment is needed in oil and gas fields with H₂S hazards?

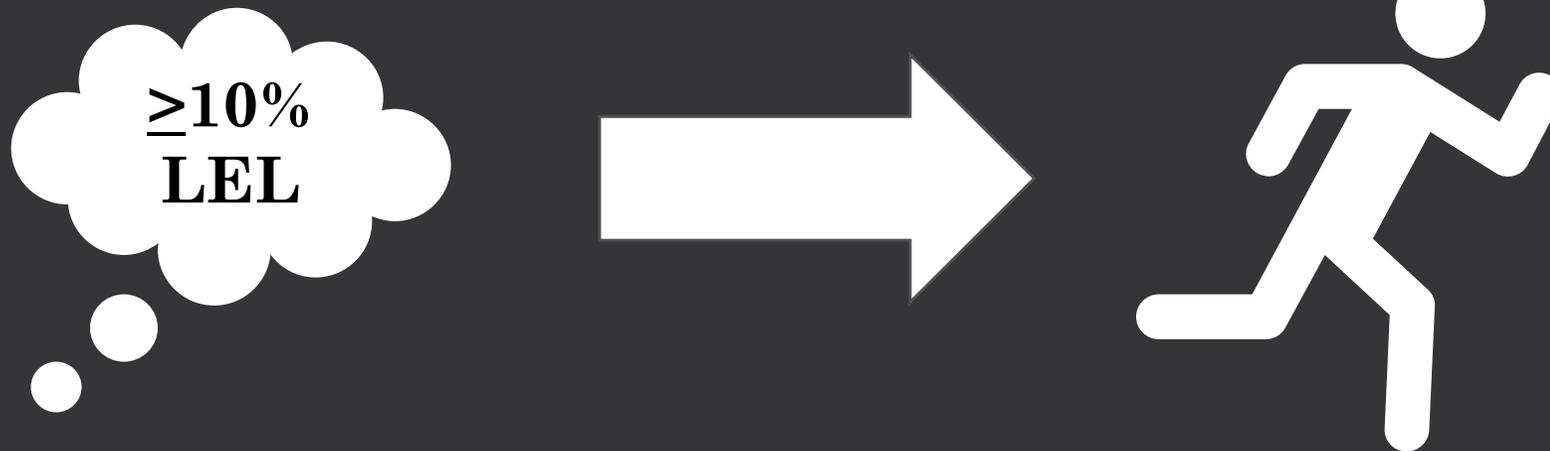
- Self-contained Breathing Apparatus (escape pack only)



Topic 1: PPE

What should the inspector do if the concentration of explosive/flammable gases equals or exceeds 10% of the Lower Explosive Level (LEL)?

- Evacuate the work site





Topic 1: PPE

Who is required to wear PPE?

- All Oil and Gas Inspectors
 - Including oil and gas surface inspectors

When are you required to wear PPE?

- When conducting inspections at oil and gas sites
 - During construction/reclamation activities
 - During drilling activities
 - During production activities
 - *Even if the well is in a temporarily abandoned (TA) or shut-in status*
- When conducting undesirable event inspections



Topic 1: PPE

Where can an inspector acquire PPE?

- Direct Supervisor
- Field Office Safety Coordinator

How can the inspector determine which PPE items to acquire?

- Review your Risk Assessment or Risk Management Worksheets with your supervisor
- Coordinate with PET's in your office



Topic 2: PPE and Compliance Inspections



Topic 2: PPE and Compliance Inspections

What are the different compliance inspections that oil and gas surface inspectors conduct?

- Environmental/Surface Inspection
 - Surface Construction
 - Surface Drilling
 - Interim Reclamation
 - Surface Production
 - Surface Abandonment
- Undesirable Event Inspections





Topic 2: PPE

What hazards necessitate PPE during compliance inspections?

Potential Hazards
Heavy Equipment Operation <i>(e.g., bulldozers, excavators, forklifts, etc.)</i>
Flaring or Potential Flames
Loud Noises
Potential Gas Release
Moving Equipment <i>(e.g., pumping unit, drilling rig, etc.)</i>

Topic 2: PPE and Compliance Inspections

What PPE is needed during most surface compliance inspections?

- Hardhat
- Safety Glasses
- Hearing Protection
- Safety-toe Boots
- FR Clothing
- Gas Monitor
- Reflective Safety Vest (as needed)





Topic 2: PPE and Compliance Inspections

Under what circumstances might a surface inspector not need typical oil and gas PPE?

- ES-SA or EM-FR inspection involving vegetation monitoring for a site not near other oil and gas sites*



*It is good practice to keep PPE items in your vehicle in case an unexpected need arises.



Topic 3: Other Equipment and Supplies for Compliance Inspections





Topic 3: Other Equipment and Supplies for Compliance Inspections

Other than PPE, what other equipment and supplies might a surface inspector need to conduct inspections?

- Form 3160-33 (Environmental Inspection Form)
- Horizontal measuring device
 - Measuring wheel, range finder, tape measure, etc.
- Vertical measuring device
 - Telescopic measuring pole/rod or foldable meter stick
- GPS (or ArcGIS Collector)
- Clinometer (% and degrees)
- Camera
- Sound Meter
- Phone
- Additional Communication Device
- Rod/Pin for vegetation surveys

Topic 3: Other Equipment and Supplies for Compliance Inspections

Why would an inspector need measuring devices to conduct inspections?

Compliance Inspection	Rationale for Equipment
SC	Measure dimensions of drilling pad, road, facility, and topsoil
SD	Measure dimensions of containments
IR	Measure dimensions of production pad, reclamation areas, etc.
SP	Measure dimensions of secondary containments Measure height of production facilities (e.g., <i>VRM II COA</i>)
SA	May use measuring tape for vegetation transects for monitoring
NU	Measure distance and/or dimensions of spills



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NU – Undesirable Event



Topic 3: Other Equipment and Supplies for Compliance Inspections

Why would an inspector need a GPS to conduct inspections?

Compliance Inspection	Rationale for Equipment
SC	Map disturbance limits, drill pad, topsoil, access road, facility or utility disturbances, etc.
SD	Map disturbances
IR	Map production pad, reclamation areas, etc.
SP	Map secondary containments, facilities, etc.
SA	May use GPS for vegetation transects for monitoring (<i>e.g., map transect lines</i>)
NU	Map spill extent, disturbance limits, etc.





Topic 3: Other Equipment and Supplies for Compliance Inspections

Why would an inspector need a clinometer to conduct inspections?

Compliance Inspection	Rationale for Equipment
SC	Measure grade of cut/fill slopes, other slopes, etc.
SD	-
IR	Measure grade of recontoured slopes (if specified in APD or COAs)
SP	Measure height of facilities
SA	Measure grade of recontoured slopes (if specified in APD or COAs)
NU	Measure grade of terrain where spill occurred



Topic 3: Other Equipment and Supplies for Compliance Inspections

Why would an inspector need a camera to conduct inspections?

- Take photographs during inspection



Why would an inspector need a phone to conduct inspections?

- Communication
- Take photographs
- Use of various applications
 - ArcGIS Collector, Survey 123, etc.



Topic 3: Other Equipment and Supplies for Compliance Inspections

Why would an inspector need a sound meter to conduct inspections?

- Measure noise levels
 - Typically associated with production facility COAs near residents or sensitive wildlife habitat

Why would an inspector need an additional communication device to conduct inspections?

- Communication in remote areas
 - InReach, radio, satellite phone, etc.



Topic 3: Other Equipment and Supplies for Compliance Inspections

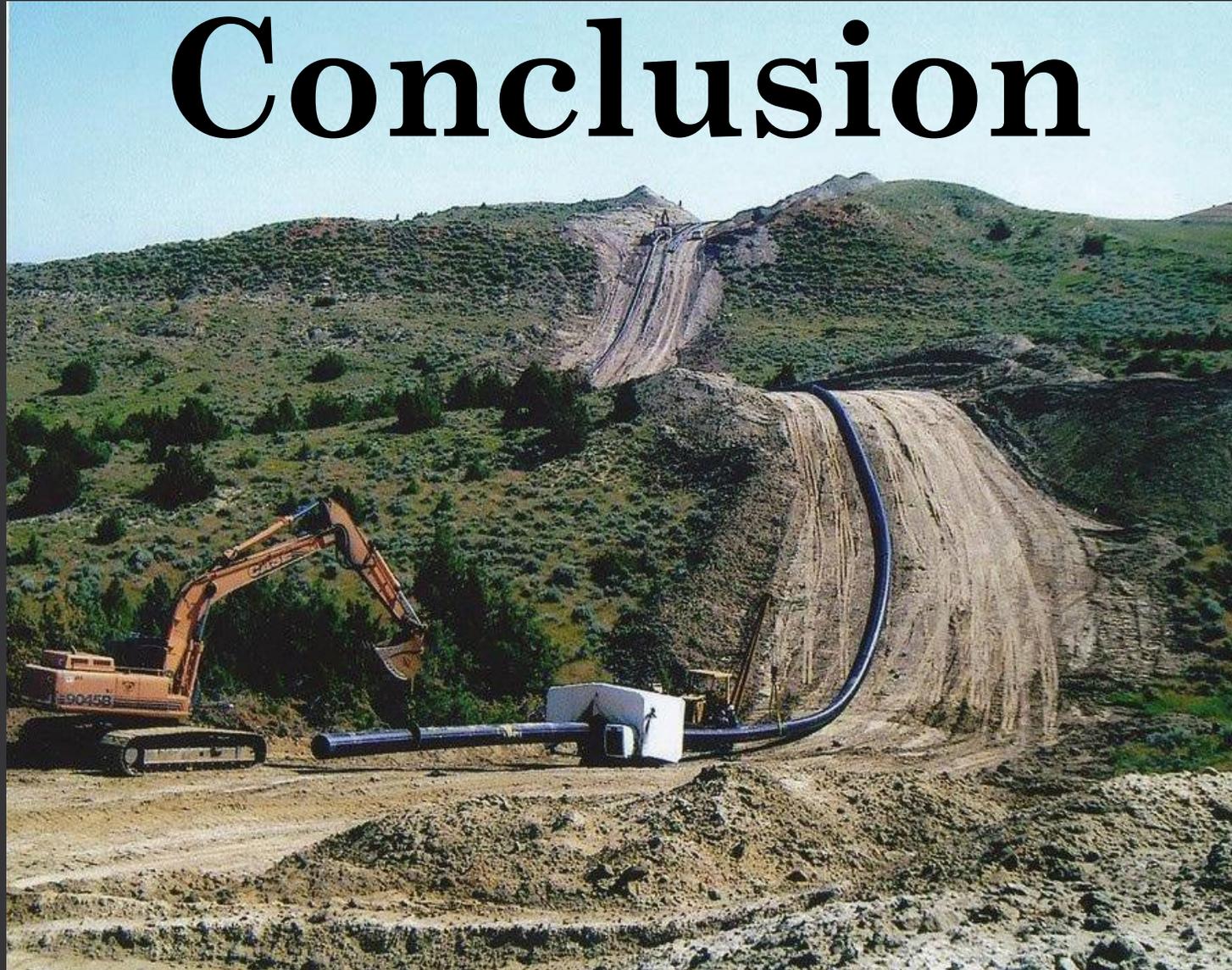
Why would an inspector need a vegetation transect rod or pin to conduct inspections?

- Perform vegetation surveys for monitoring inspections (EM-IR or EM-FR)
- Rod or pin is used to help collect vegetation data (*i.e.*, *basal cover*, *foliar cover*, *etc.*) at various sample units along a transect line





Conclusion





Lesson Objective:

Now, each student should be able to...

Given a scenario involving a compliance inspection, identify all necessary equipment and supplies needed to effectively conduct specific compliance inspections and provide supporting rationale for why those items are needed.



Lesson Route

To reach that objective we covered the following...

- Personal Protective Equipment (PPE)
- PPE and Compliance Inspections
- Other Equipment and Supplies for Compliance Inspections



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